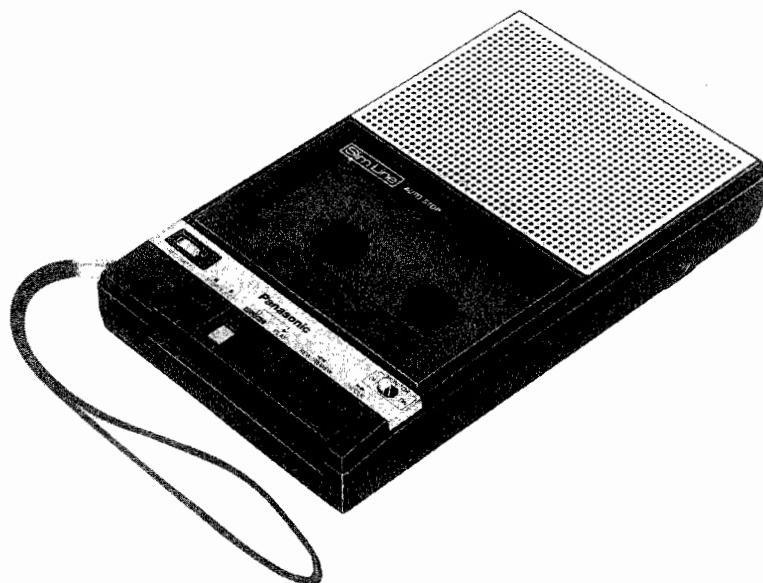


# Service Manual

Super Slim-Line Cassette Recorder for  
Personal Computer Data Storage

*M14* *M82*  
Portable Cassette  
**RQ-8200**  
(Black)



This is the Service Manual for the following areas.  
 ..... For all European areas except United Kingdom.  
 ..... For United Kingdom.

## RQ-2720 MECHANISM SERIES

### Specifications

Power requirement:	Battery: 6V (four R6 dry batteries)
	<input type="checkbox"/> ... AC; with optional AC adaptor RD-9477
	<input checked="" type="checkbox"/> ... AC; with optional AC adaptor RP-67
Motor:	Electrical governor motor
Power output:	600mW ... Max.
Frequency range:	100 — 8,000Hz
Tape speed:	4.8cm/s
Fast forward and rewind time:	Approx. 90 seconds with C-60 cassette tape
Track system:	2-track monaural recording and playback
Jacks:	Mic; sensitivity 0.25mV/applicable microphone impedance 200Ω—600Ω
	Remote; for start and stop at hand
	Ext. SP; 8Ω
	DC in; 6V
Speaker:	6.5cm
Dimensions:	119.0mm(W) × 29.9mm(H) × 198.5mm(D)
Weight:	535g, without batteries

Specifications are subject to change without notice.

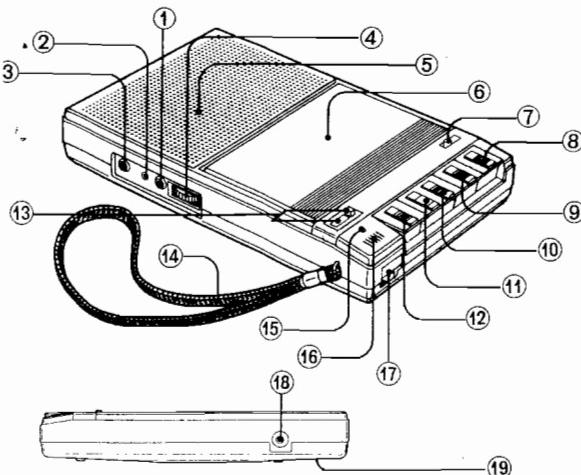
# Panasonic

**Matsushita Electric Trading Co., Ltd.**  
P.O. Box 288, Central Osaka Japan

# CONTENTS

ITEM	PAGE
LOCATION OF CONTROLS AND COMPONENTS	2
OPERATING INSTRUCTIONS	2
DISASSEMBLY INSTRUCTIONS	3
MEASUREMENT AND ADJUSTMENT METHODS	4
ELECTRICAL PARTS LOCATION	5
SCHEMATIC DIAGRAM	5
CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM	7
MECHANICAL PARTS LOCATION	8
CABINET PARTS LOCATION	10

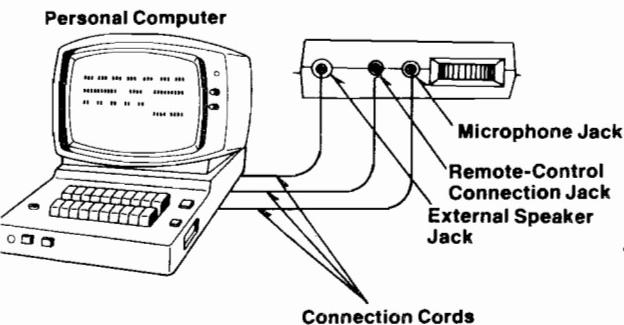
## LOCATION OF CONTROLS AND COMPONENTS



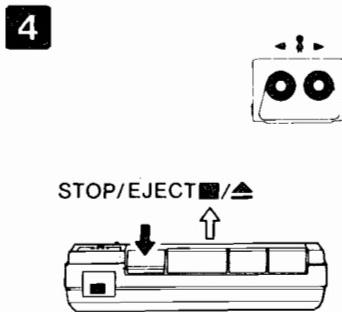
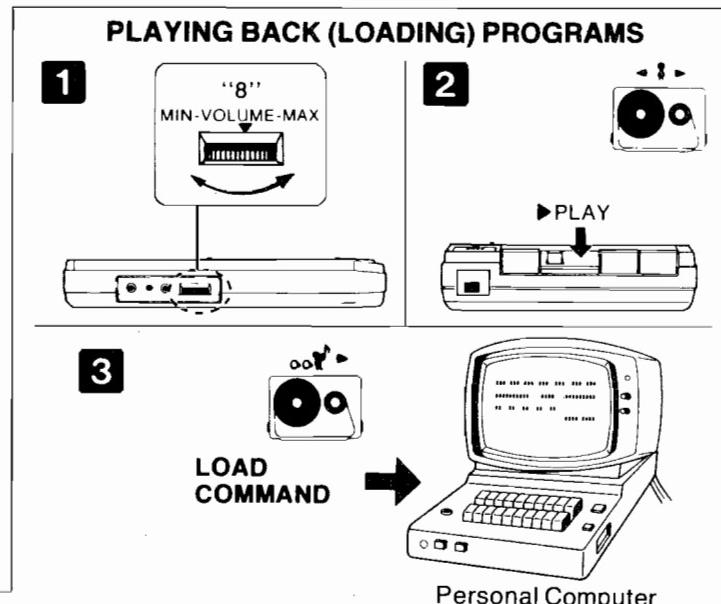
- |  |   |
|--|---|
| <p>① <b>Microphone Jack (MIC)</b><br/>② <b>Remote-Control Connection Jack (REMOTE)</b><br/>③ <b>External Speaker Jack [EXT. SP (8Ω)]</b><br/>④ <b>Volume Control [MIN-VOLUME-MAX.]</b><br/>⑤ <b>Built-in Speaker</b><br/>⑥ <b>Cassette Compartment Cover</b><br/>⑦ <b>Monitor Switch [MONITOR (OFF●ON)]</b><br/>⑧ <b>Fast Forward/Cue Button [FF/CUE (▶▶)]</b><br/>⑨ <b>Rewind/Review Button [REW/REVIEW (◀◀)]</b><br/>⑩ <b>Play Button [PLAY (▶)]</b></p> | <p>⑪ <b>Record Button [RECORD (○)]</b><br/>⑫ <b>Stop/Eject Button [STOP/EJECT (■/▲)]</b><br/>⑬ <b>Tape Counter and Reset Button</b><br/>⑭ <b>Hand Strap</b><br/>⑮ <b>Recording Indicator/Battery-check Lamp (REC/BATT)</b><br/>⑯ <b>Built-in Microphone (MIC)</b><br/>⑰ <b>Pause Control [PAUSE (LOCK●OFF)]</b><br/>⑱ <b>Car Adaptor Connection Jack (DC IN 6 V) (⊖○⊕)</b><br/>⑲ <b>Battery Compartment [BATT OPEN]</b></p> |
|--|---|

## OPERATING INSTRUCTIONS

### ■ Connection with Personal Computer



- For details, refer to the operating instructions of the personal computer.
- When the monitor switch is set to "on", the signals of the personal computer can be monitored at a low volume from the built-in speaker during recording and playback.

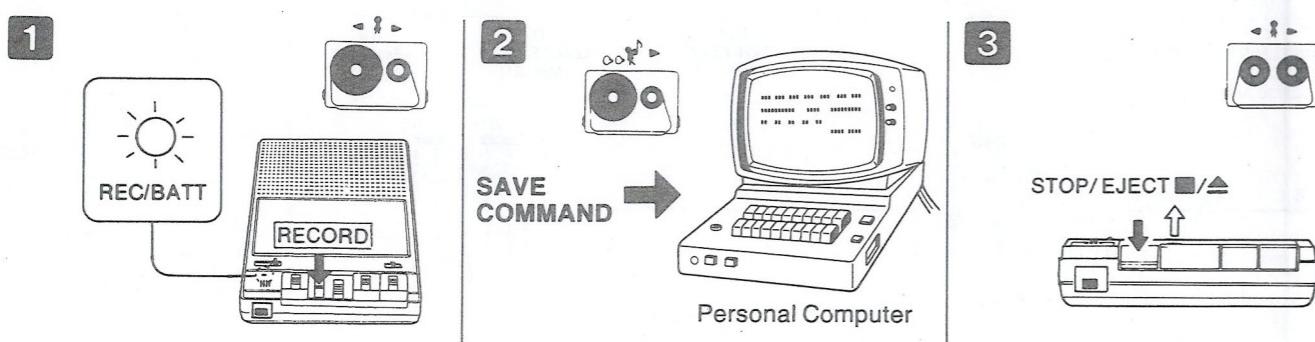


- Do not vary the volume while the tape is traveling since this may result in an error.

### Notes:

- If the personal computer does not have a remote control function, push in the playback button and then set the pause switch to "on" immediately.
- The pause control is released when the personal computer is set to the load command, the tape is allowed to run and the program/data are read into the personal computer's memory.

## RECORDING (SAVING) PROGRAMS



## Notes:

- If the personal computer does not have a remote control function, push in the record button and then immediately set the pause switch to "on".
- The pause control is released when the personal computer is set to the save command, the tape is allowed to run and the program/data of the personal computer are recorded onto the tape.

## DISASSEMBLY INSTRUCTIONS

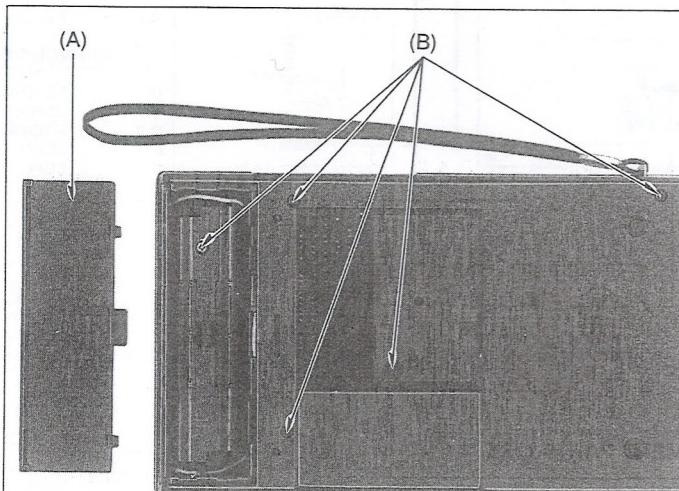


Fig. 1

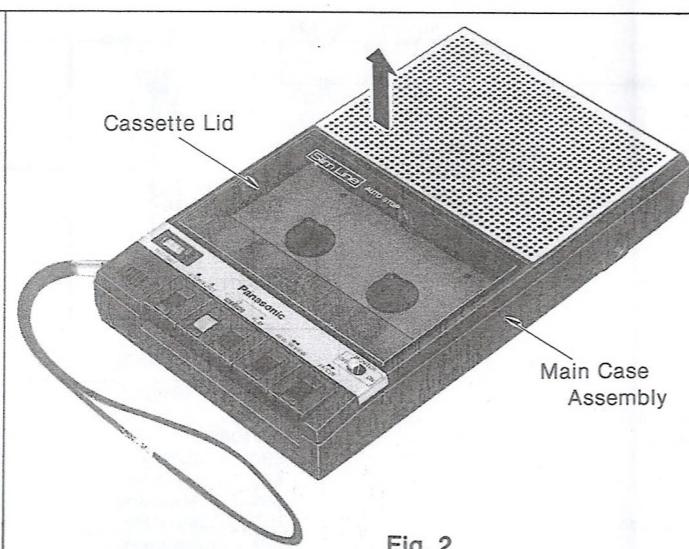


Fig. 2

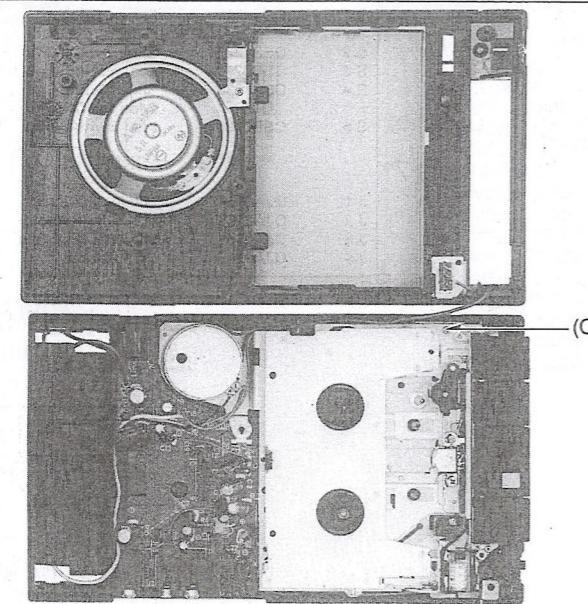


Fig. 3

Procedure	To remove	Remove	Shown in fig.
1	Main case assembly	<ul style="list-style-type: none"> <li>Battery cover ..... (A)</li> <li>5 screws ..... (B)</li> </ul> <p>Open the cassette lid and then remove the main case assembly in the direction of the arrow (shown in fig. 2).</p>	1 1
2	Circuit board and mechanism unit	• 1 screw ..... (C)	3

## MEASUREMENT AND ADJUSTMENT METHODS

## NOTES:

- Make sure head is clean.
- Make sure capstan and pressure roller are clean.
- Judgeable room temperature:  $20 \pm 5^\circ\text{C}$  ( $68 \pm 9^\circ\text{F}$ )

- Volume control: Maximum
- Pause control: OFF

ITEM	MEASUREMENT & ADJUSTMENT
Head azimuth adjustment Condition: * Playback mode Equipment: * VTVM      * Oscilloscope * Test tape (azimuth) ... QZZCFM * Resistor (8Ω)	<p>1. Test equipment connection is shown in fig. 1. 2. Playback azimuth tape (QZZCFM 8kHz). 3. Adjust record/playback head angle adjustment screw (A) in fig. 2 so that output level becomes maximum. 4. After adjustment lock head adjustment screw with lacquer.</p>
Tape speed accuracy adjustment Condition: * Playback mode Equipment: * Digital electronic counter or frequency counter * Test tape ... QZZCWAT * Resistor (8Ω)	<p>1. Test equipment connection is shown in fig. 3. 2. Playback test tape (QZZCWAT 3,000Hz), and supply playback signal to frequency counter. 3. Take measurement at middle section of tape. 4. Measure this frequency. 5. On the basis of 3,000Hz, determine value by following formula:</p> $\text{Tape speed accuracy} = \frac{f - 3,000}{3,000} \times 100 (\%) \quad \text{where, } f = \text{measured value}$ <p>Standard value: <math>\pm 3\%</math></p> <p>Adjustment method</p> <ol style="list-style-type: none"> <li>Playback the test tape (middle).</li> <li>Adjust tape speed adjustment VR so that frequency becomes 3,000 Hz.</li> </ol> <p></p> <p>Caution: Do not insert a screwdriver more than 8 mm from surface A. If inserted further, rotor winding may be damaged.</p>

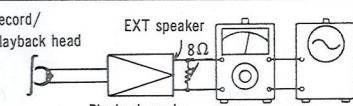


Fig. 1

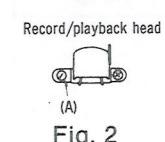


Fig. 2

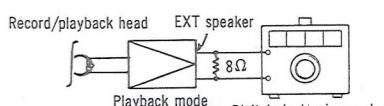
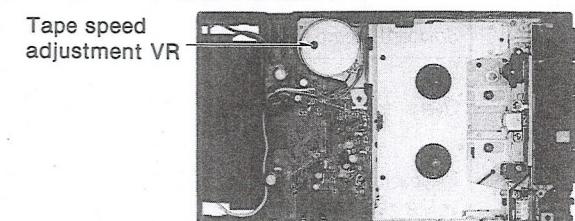
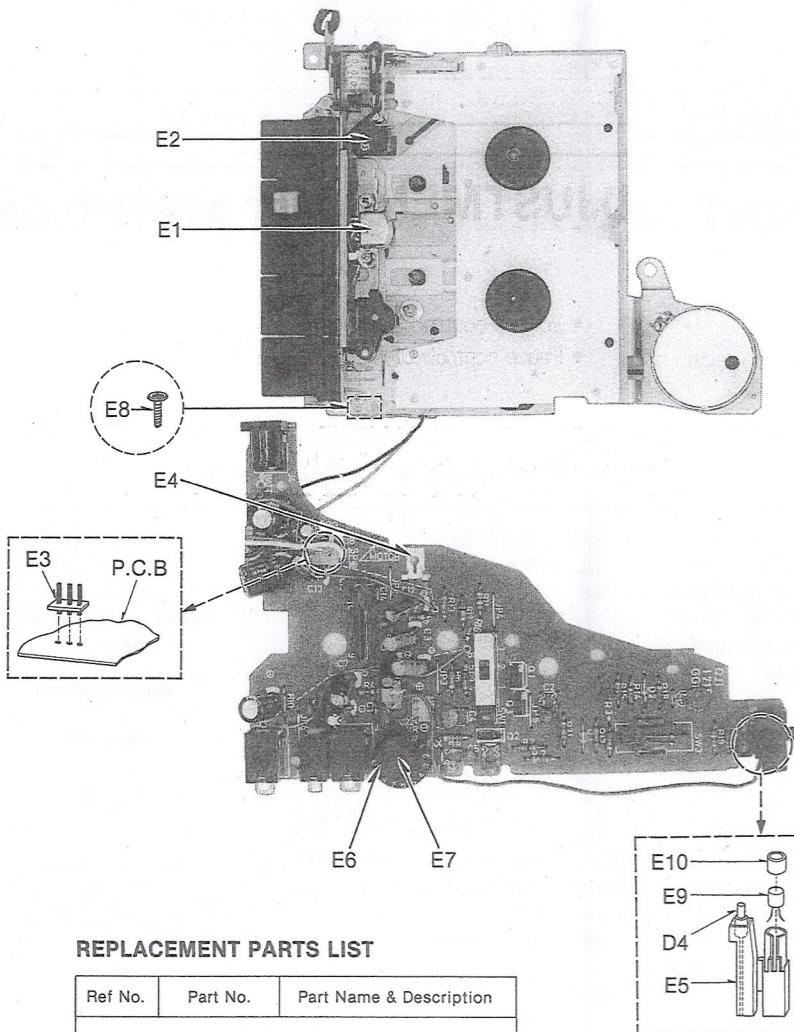


Fig. 3



## ELECTRICAL PARTS LOCATION



## REPLACEMENT PARTS LIST

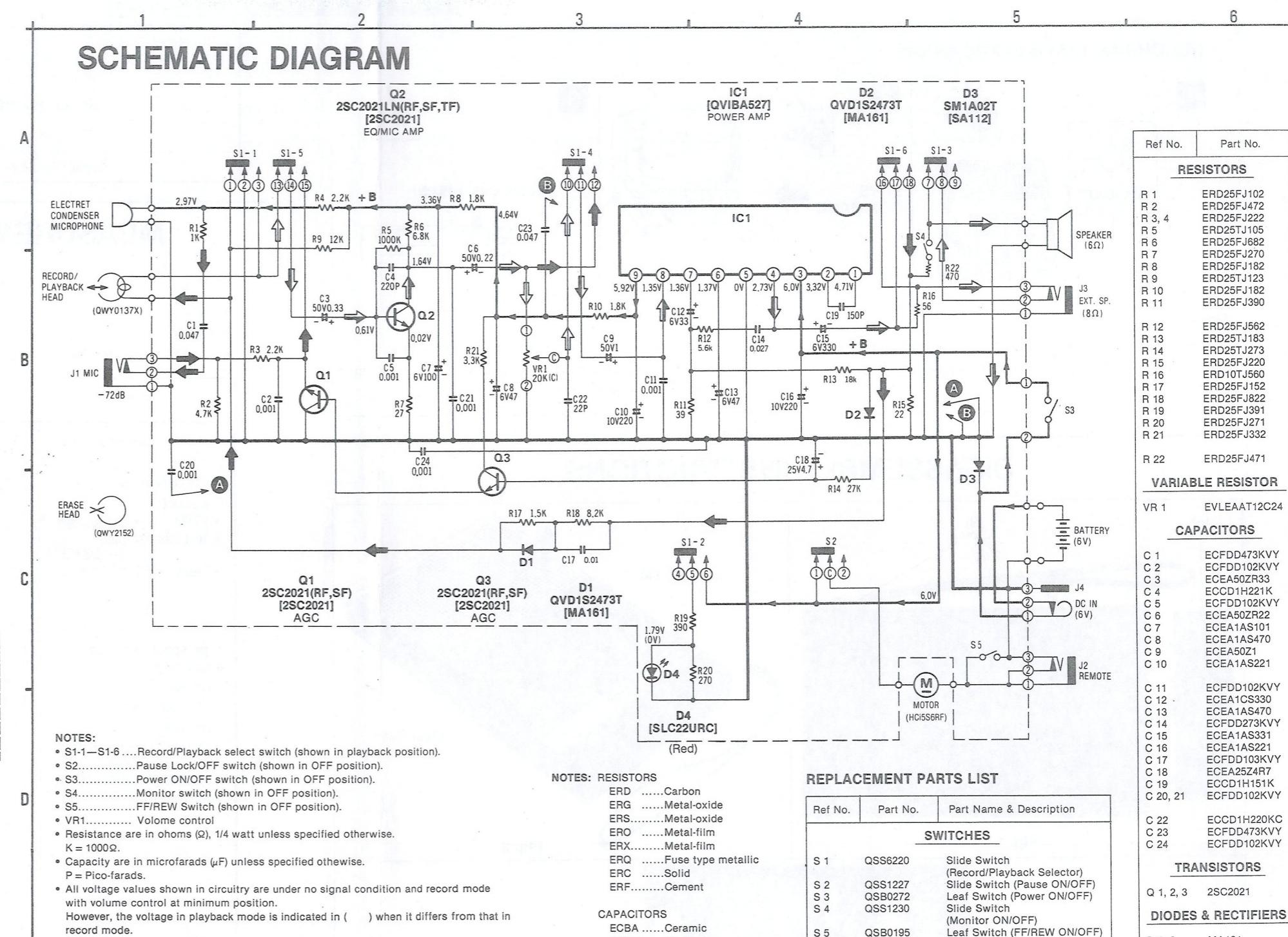
Ref No.	Part No.	Part Name & Description
<b>ELECTRICAL PARTS</b>		
E 1	QWY0137X	Record/Playback Head
E 2	QWY2152	Erase Head
E 3	QJP1908JO	3Pin Post
E 4	QJC0043	Shield Plate
E 5	QKJ0478	LED Holder
E 6	QGT1602K	Volume Knob
E 7	XQN17B28FZ	Screw $\oplus 1.7 \times 2.8$
E 8	XTN2+6B	Tapping Screw $\oplus 2 \times 6$
E 9	WM063Y110	Condenser Microphone
E 10	QBG1695	Microphone Rubber

## SPECIFICATIONS \* Volume control ... MAX

Standard recording input level	MIC: around $-72$ dB
Overall frequency response	250Hz: $-1 \pm 5$ dB 1kHz: 0dB 6kHz: $-7 \pm 6$ dB
Playback output level * Use test tape ... QZZCFM (315Hz, 0dB)	More than 1.7 V

Record/playback head    EXT speaker    8Ω    Playback mode    VTVM    Oscilloscope

## SCHEMATIC DIAGRAM



## NOTES:

- S1-1-S1-6 .... Record/Playback select switch (shown in playback position).
- S2.....Pause Lock/OFF switch (shown in OFF position).
- S3.....Power ON/OFF switch (shown in OFF position).
- S4.....Monitor switch (shown in OFF position).
- S5.....FF/REW Switch (shown in OFF position).
- VR1..... Volume control
- Resistance are in ohms ( $\Omega$ ), 1/4 watt unless specified otherwise.  
 $K = 1000\Omega$ .
- Capacity are in microfarads ( $\mu F$ ) unless specified otherwise.  
 $P = \text{Pico-farads}$ .
- All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position.  
However, the voltage in playback mode is indicated in ( ) when it differs from that in record mode.  
For measurement, use VTVM.

- (  $\Rightarrow$  ) this arrow indicates the flow of the playback signal.
- (  $\Rightarrow$  ) this arrow indicates the flow of the recording signal.
- (  $\Rightarrow$  ) this arrow indicates the flow of the playback and recording signal in combination.
- (  $\Rightarrow$  ) indicates B + (bias).

Described in the schematic diagram are two types of numbers; the supply parts number and production parts number for transistors and diodes.

One type of number is used for supply parts number and production parts number when they are identical.

e.g. Q1

- [2SC2021 (RF, SF)] — Production parts number  
[2SC2021SF] — Supply parts number
- D2  
[QVD1S2473T] — Production parts number  
[MA161] — Supply parts number

The supply parts number is described alone in the replacement parts list.

This schematic diagram may be modified at any time with the development of new technology.

## NOTES: RESISTORS

- ERD .....Carbon  
ERG .....Metal-oxide  
ERS.....Metal-oxide  
ERO .....Metal-film  
ERX.....Metal-film  
ERQ .....Fuse type metallic  
ERC .....Solid  
ERF.....Cement

## CAPACITORS

- ECBA .....Ceramic  
ECG□ .....Ceramic  
ECK□ .....Ceramic  
ECC□ .....Ceramic  
ECF□ .....Ceramic  
ECQM.....Polyester film  
ECQE .....Polyester film  
ECQP .....Polypropylene  
ECE□ .....Electrolytic  
ECE□N ...Non polar electrolytic  
ECQS .....Polystyrene  
ECS□ .....Tantalum  
QCS .....Tantalum

## REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description
<b>SWITCHES</b>		
S 1	QSS6220	Slide Switch (Record/Playback Selector)
S 2	QSS1227	Slide Switch (Pause ON/OFF)
S 3	QSB0272	Leaf Switch (Power ON/OFF)
S 4	QSS1230	Slide Switch (Monitor ON/OFF)
S 5	QSB0195	Leaf Switch (FF/REW ON/OFF)
<b>JACKS</b>		
J 1	QJA0154	M3 Jack (Microphone)
J 2	QJA0156	M2 Jack (Remote)
J 3	QJA0154	M3 Jack (Ext. Speaker)
J 4	QJA0149	DC IN Jack

## RESISTORS

- R 1 ERD25FJ102  
R 2 ERD25FJ472  
R 3, 4 ERD25FJ222  
R 5 ERD25FJ105  
R 6 ERD25FJ682  
R 7 ERD25FJ270  
R 8 ERD25FJ182  
R 9 ERD25TJ123  
R 10 ERD25FJ182  
R 11 ERD25FJ390
- R 12 ERD25FJ562  
R 13 ERD25TJ183  
R 14 ERD25TJ273  
R 15 ERD10TJ560  
R 16 ERD25FJ152  
R 17 ERD25FJ822  
R 18 ERD25FJ391  
R 19 ERD25FJ271  
R 20 ERD25FJ332  
R 21 ERD25FJ471

## VARIABLE RESISTOR

- VR 1 EVLEAAT12C24

## CAPACITORS

- C 1 ECFDD473KVY  
C 2 ECFDD102KVY  
C 3 ECEA50ZR33  
C 4 ECCD1H221K  
C 5 ECFDD102KVY  
C 6 ECEA50ZR22  
C 7 ECEA1AS101  
C 8 ECEA1AS470  
C 9 ECEA50Z1  
C 10 ECEA1AS221

- C 11 ECFDD102KVY  
C 12 ECEA1CS330  
C 13 ECEA1AS470  
C 14 ECFDD273KVY  
C 15 ECEA1AS331  
C 16 ECEA1AS221  
C 17 ECFDD103KVY  
C 18 ECEA25Z4R7  
C 19 ECCD1H151K  
C 20, 21 ECFDD102KVY
- C 22 ECCD1H220KC  
C 23 ECFDD473KVY  
C 24 ECFDD102KVY

## TRANSISTORS

- Q 1, 2, 3 2SC2021

## DIODES &amp; RECTIFIERS

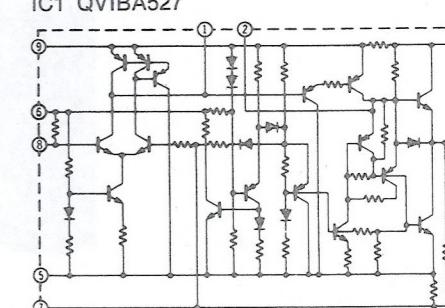
- D 1, 2 MA161  
D 3 SM112  
D 4 SLC22URC

## INTEGRATED CIRCUIT

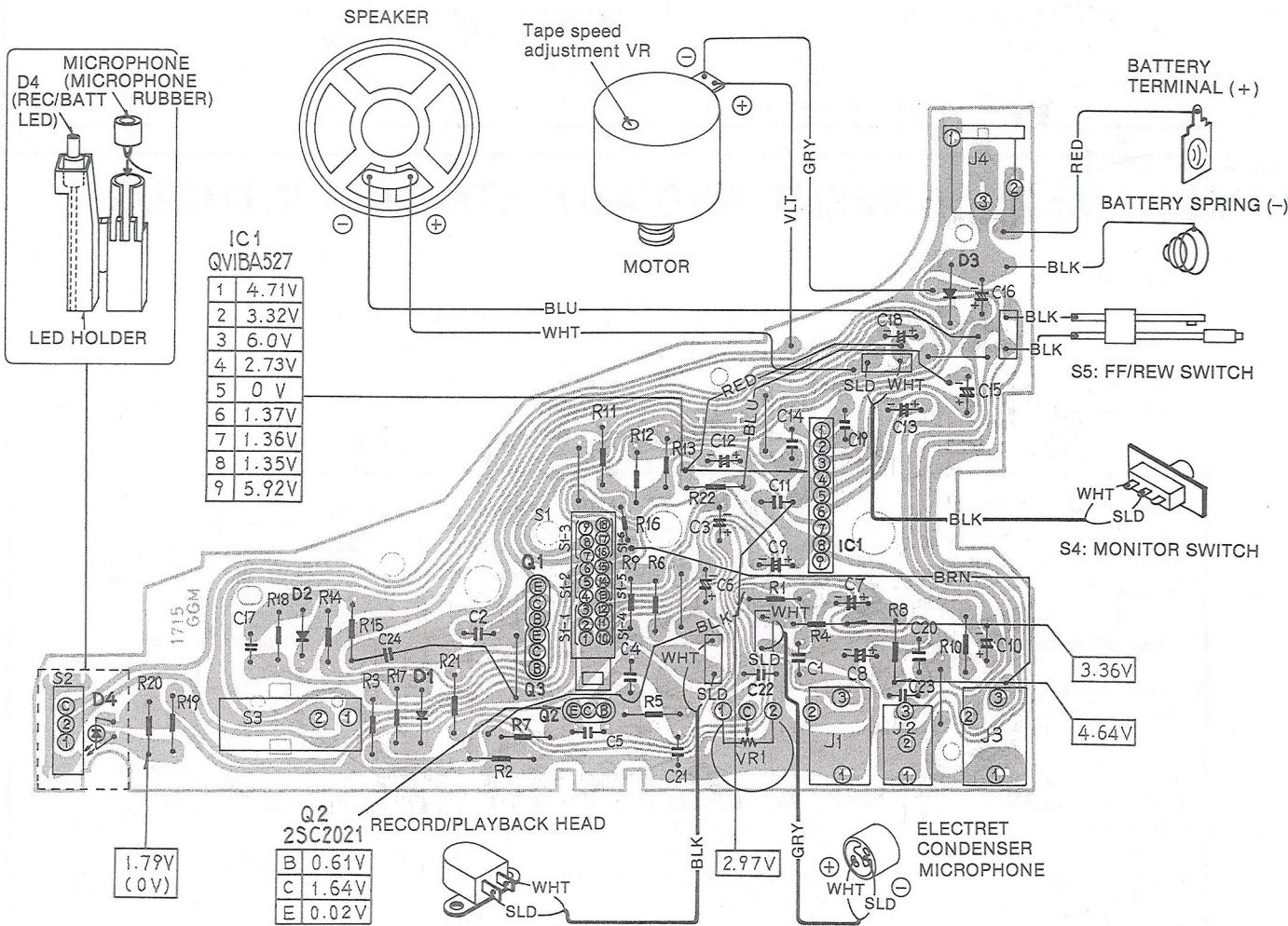
- IC 1 QVIBA527

## EQUIVALENT CIRCUIT

IC1 QVIBA527



CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM

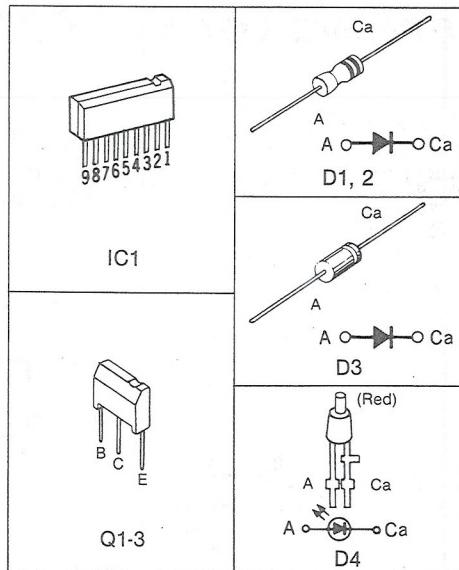


**NOTES:**

BLK .....Black  
BLU .....Blue  
BRN.....Brown  
GRY .....Gray  
GRN .....Green  
L. BLU ....Light Blue  
NIL.....No Color Mark

ORG .....Orange  
PNK .....Pink  
RED .....Red  
SLD .....Shield Wire  
VLT .....Violet  
WHT .....White  
YEL .....Yellow

## **TERMINATIONS**

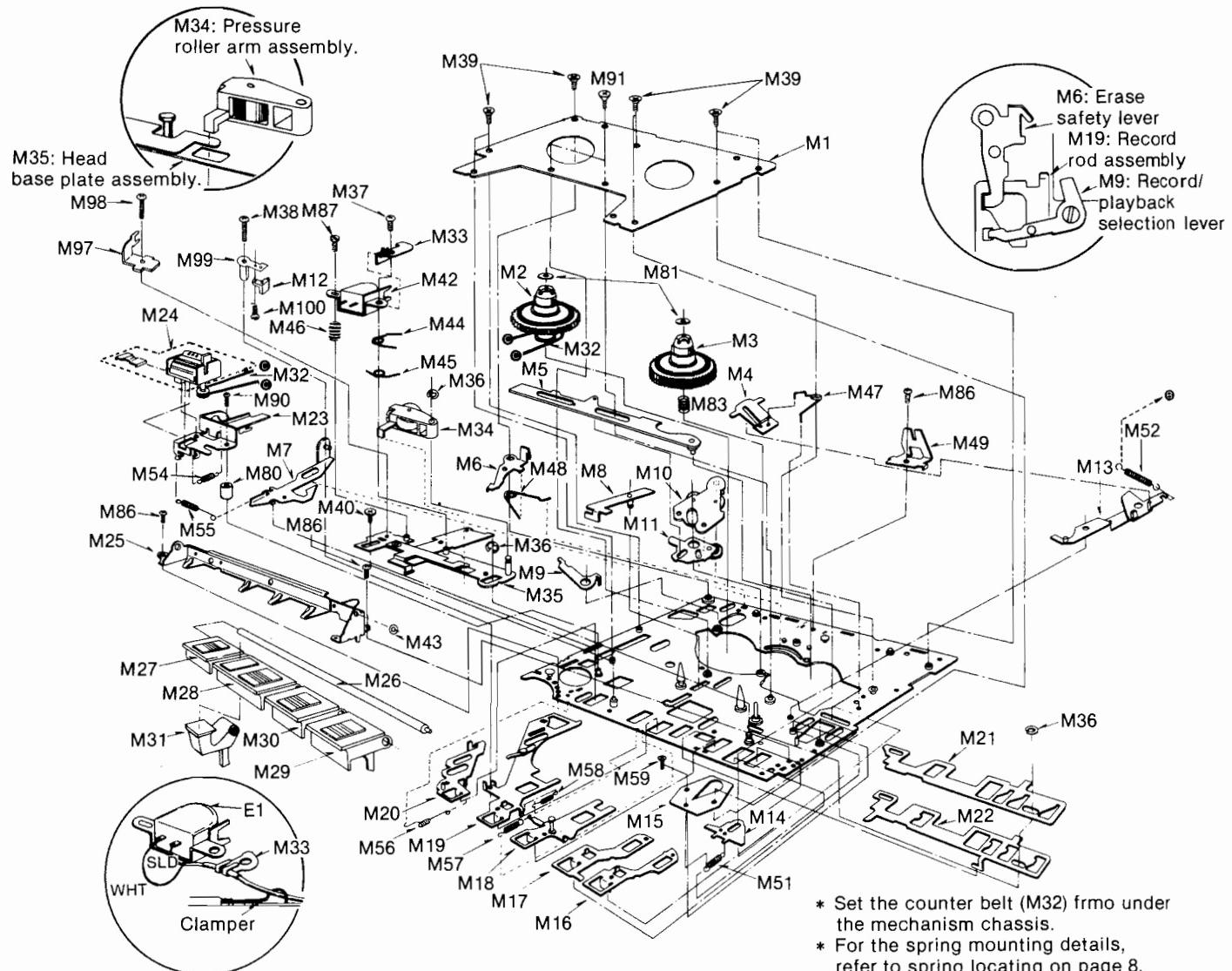


#### NOTES.

- NOTE:**

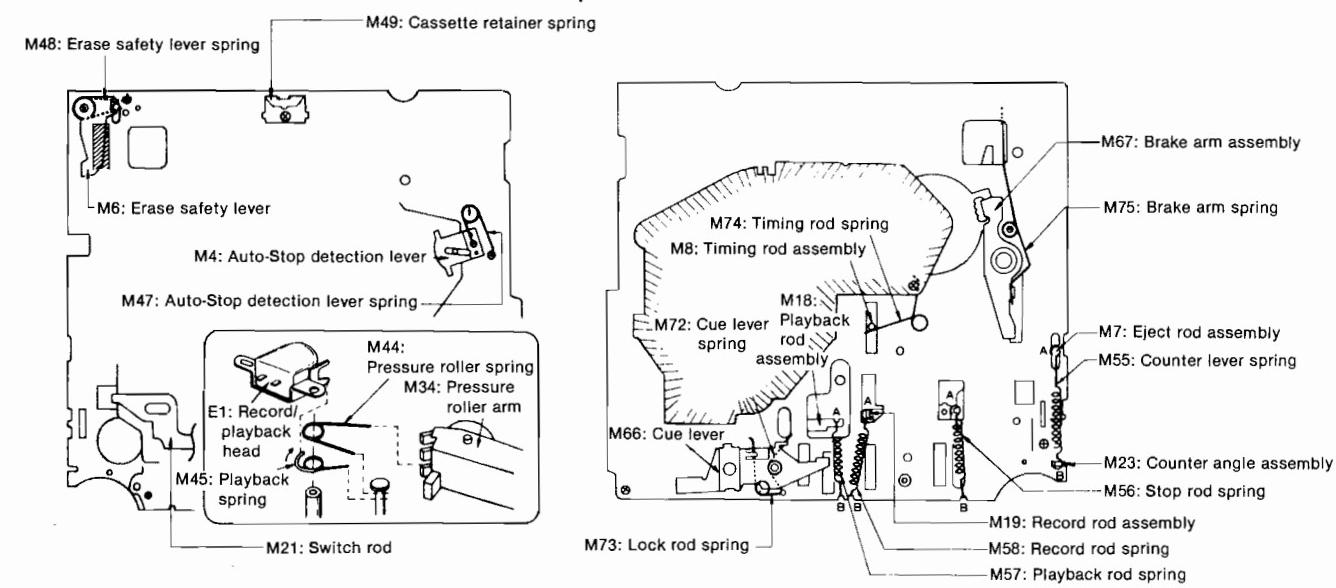
  - This circuit shown in [ ] on the conductor indicates printed circuit on the back side of the printed circuit board.
  - Values indicated in [ ] are DC voltage between the ground and electrical parts.
  - All voltage values shown in circuitry are under no signal condition and record mode with volume control at minimum position.  
However the voltage in playback mode is indicated in ( ) when it differs from that in record mode.  
For measurement, use VTVM.
  - Described in the circuit boards and wiring connection diagram are two types of numbers; the supply parts number and production parts number for transistors.  
One type of number is used for supply parts number and production parts number when they are identical.
    - e.g. Q2  
2SC2021(RF, SF, TF) — Production parts number  
[2SC2021LNSF] — Supply parts number
  - The Supply parts number is described alone in the replacement prts list.
  - **This circuit board diagram may be modified at any time with development of new technology.**

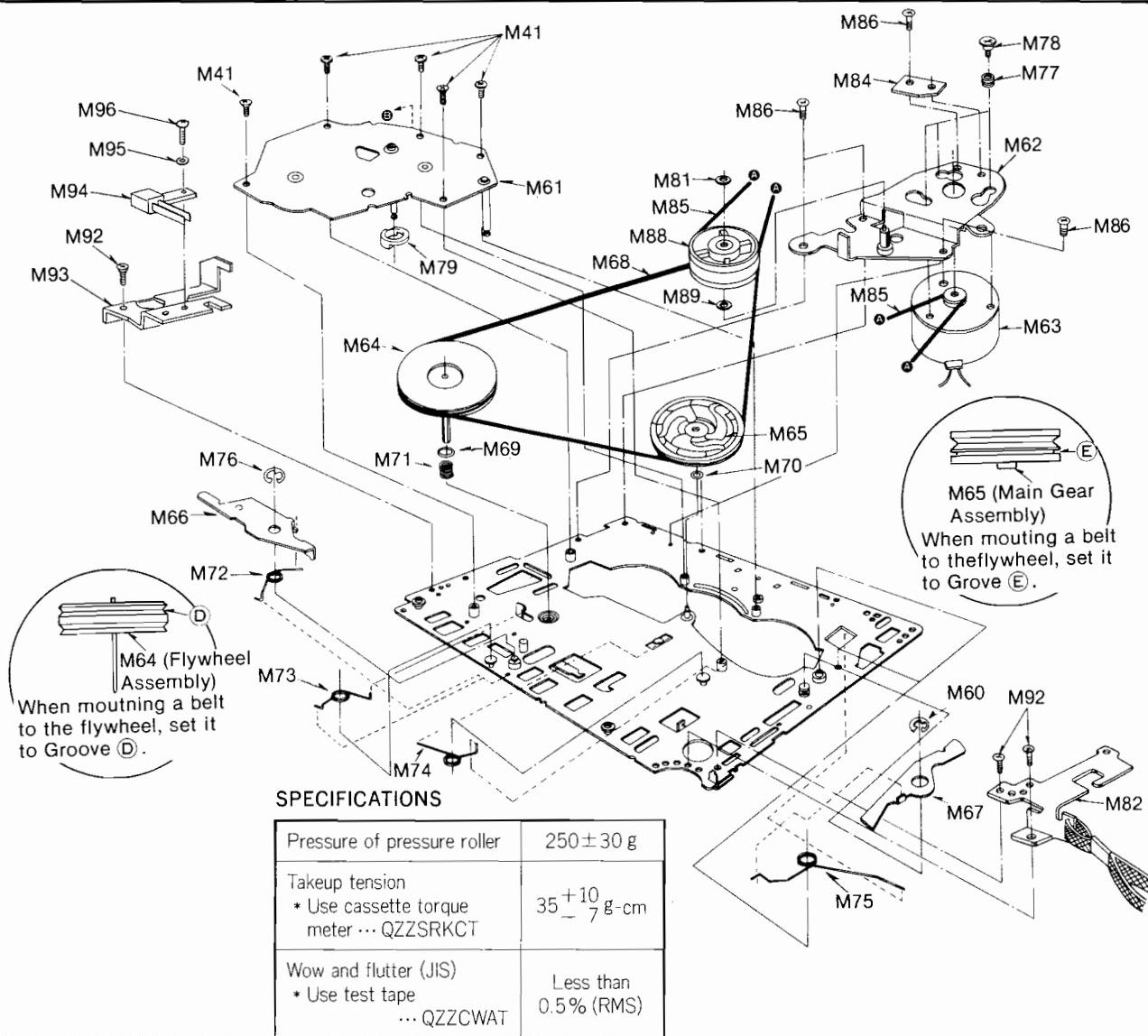
## **MECHANICAL PARTS LOCATION**



- \* Set the counter belt (M32) frmo under the mechanism chassis.
- \* For the spring mounting details, refer to spring locating on page 8.

## **SPRING LOCATION**





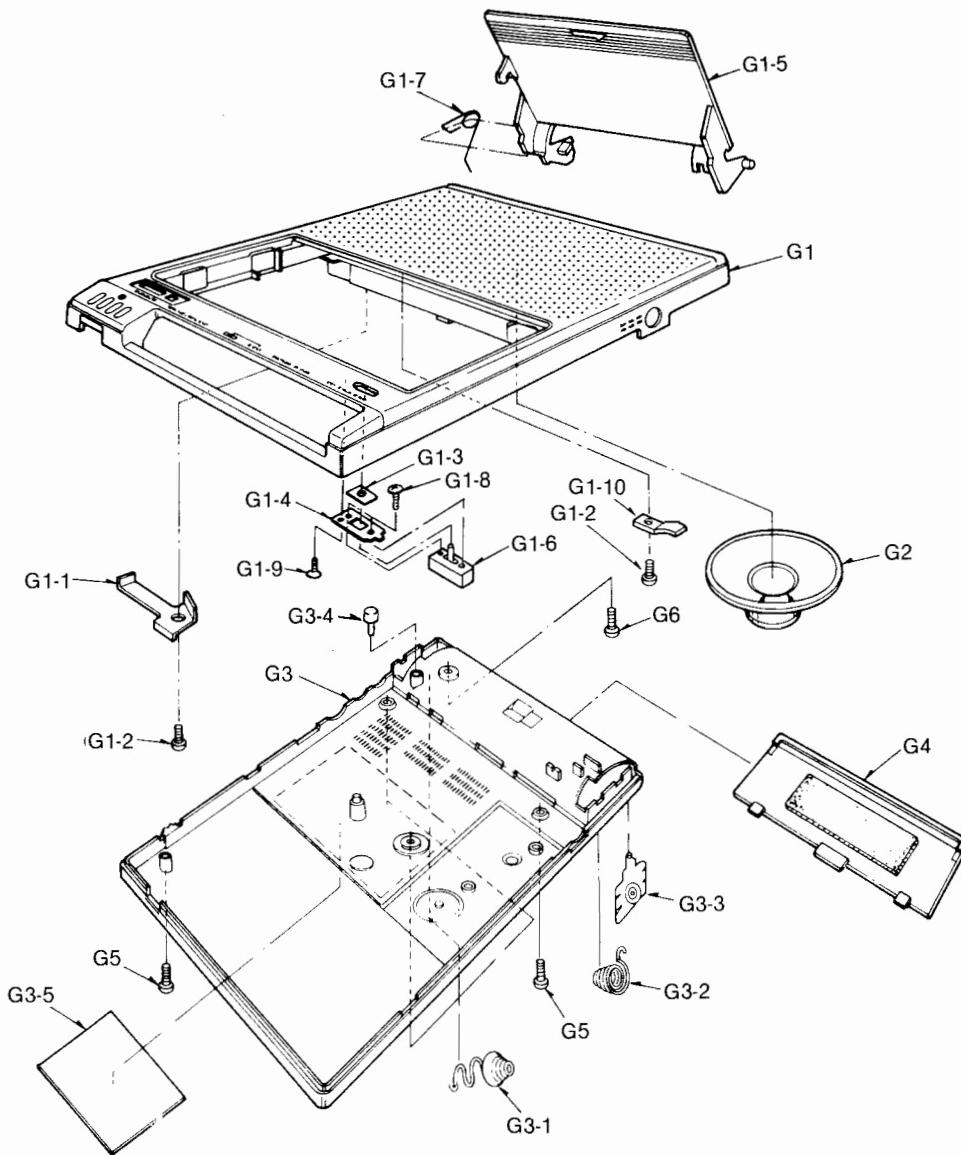
## SPECIFICATIONS

Pressure of pressure roller	$250 \pm 30 \text{ g}$
Takeup tension * Use cassette torque meter ... QZZSRKCT	$35 \pm 10 \text{ g}\cdot\text{cm}$
Wow and flutter (JIS) * Use test tape ... QZZCWAT	Less than 0.5% (RMS)

## REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description
<b>MECHANICAL PARTS</b>								
M 1	QMK1795	Chassis Cover	M 32	QDB0256	Counter Belt	M 67	QXL1307	Brake Arm Assembly
M 2	QDG1238	Supply Reel Table	M 33	OTD1274	Head Lead Clamper	M 68	QDB0279	Flywheel Belt
M 3	QXD0128	Takeup Reel Table	M 34	QXL1282	Pressure Roller Arm Assembly	M 69	QBW2059	Washer
M 4	QML3451	Auto-Stop Detection Lever	M 35	QXK2158	Head Base Plate Assembly	M 70	QBW2010	Washer
M 5	QXR0471	Control Rod Assembly	M 36	XUC2FT	Stop Ring 2φ	M 71	QBC1403	Flywheel Spring
M 6	QML3447	Erase Safety Lever	M 37	XSN2 + 4	Screw $\oplus 2 \times 4$	M 72	QBN1697	Cue Lever Spring
M 7	QXR0495	Eject Rod Assembly	M 38	XSN2 + 12	Screw $\oplus 2 \times 12$	M 73	QBN1649	Lock Rod Spring
M 8	QXR0472	Timing Rod Assembly	M 39	XTSQ16A4JFC	Screw $\oplus 1.6 \times 4$	M 74	QBN1654	Timing Rod Spring
M 9	QML3792	Record/Playback Selection Lever	M 40	QHQ1293	Step Screw	M 75	QBN1695	Brake Arm Spring
M 10	QXL1278	Fast Wind Gear Assembly	M 41	XTNQ16C4JFY	Screw $\oplus 1.6 \times 4$	M 76	XUC2FT	Stop Ring 2φ
M 11	QXL1279	Takeup Gear Lever Assembly	M 42	refer to E1	Record/Playback Head	M 77	QBG1676	Motor Rubber
M 12	refer to E2	Erase Head	M 43	QBW2008	Washer	M 78	QHQ1302	Step Screw
M 13	QXL1412	Lock Release Lever Assembly	M 44	QBN1650	Pressure Roller Spring	M 79	QMD0021	Auto-Stop Cam
M 14	QML3442	Fast Wind Control Rod	M 45	QBN1651	Playback Spring	M 80	QMC0095	Rod Collar
M 15	QMF2078	Control Lever Pressure Plate	M 46	QBC1339	Head Spring	M 81	QBW2030	Washer
M 16	QMR1742	Fast Forward Rod	M 47	QBN1829	Auto-Stop Detection Lever Spring	M 82	QYH0103K	Hand Strap Assembly
M 17	QMR1741	Rewind Rod	M 48	QBN1647	Erase Safety Lever Spring	M 83	QBC1402	Back Tension Spring
M 18	QXR0473	Playback Rod Assembly	M 49	QBP1843	Cassette Retainer Spring	M 84	QMF2112	Stopper
M 19	QXR0494	Record Rod Assembly	M 51	QBT1864	Fast Wind Control Lever	M 85	QDB0280	Motor Belt
M 20	QXR0476	Stop Rod Assembly	M 52	QBT1874	Lock Release Lever Spring	M 86	XTNQ16C3F	Screw $\oplus 1.6 \times 3$
M 21	QMR1744	Switch Rod	M 54	QBT1875	Eject Lever Spring	M 87	XSBQ2D45	Head Adjustment Screw
M 22	QMR1743	Lock Rod	M 55	QBT1863	Counter Lever Spring	M 88	QXP0630	Pulley Assembly
M 23	QXA0776	Counter Angle Assembly	M 56	QBT1862	Stop Rod Spring	M 89	QBW2012	Washer
M 24	QDC0146	Tape Counter	M 57	QBT1860	Playback Rod Spring	M 90	XQN16 + C4FY	Screw $\oplus 1.6 \times 4$
M 25	QXA0777	Button Angle Assembly	M 58	QBT1861	Record Rod Spring	M 91	XQS16 + A22FC	Screw $\oplus 1.6 \times 2.2$
M 26	QMN2412	Button Shaft	M 60	XUB3FT	Stop Ring 3φ	M 92	XTNQ16 + 3F	Screw $\oplus 1.6 \times 3$
M 27	QGO1844K	Push Button (Stop/Eject)	M 61	QXK2387	Lower Base Plate Assembly	M 93	QMA4455	Switch Angle
M 28	QGO1845K	Push Button (Playback)	M 62	QXA1157	Motor Holding Plate Assembly	M 94	refer to S5	Leaf Switch (FF/REW Switch)
M 29	QGO1847K	Push Button (Fast Forward/Cue)	M 63	HCI5S6RF	DC Motor	M 95	XWC2B	Washer
M 30	QGO1846K	Push Button (Rewind/Review)	M 64	QXF0169	Flywheel Assembly	M 96	XSN2 + 4	Screw $\oplus 2 \times 4$
M 31	QGO1848	Push Button (Record)	M 65	QXG1058	Main Gear Assembly	M 97	QMG0071	Tape Guide
			M 66	QML3449	Cue Lever	M 98	XQN16A + 16FC	Screw $\oplus 1.6 \times 1.6$
						M 99	QXA1291	Head Plate Assembly
						M 100	XSS2 + 15	Screw $\oplus 2 \times 1.5$

# CABINET PARTS LOCATION



## REPLACEMENT PARTS LIST

Ref No.	Part No.	Part Name & Description	Ref No.	Part No.	Part Name & Description
<b>CABINET PARTS</b>					
G 1	QYM0861	Main Case Assembly	G 3-3	QJB0144	Battery Terminal (+)
G 1-1	QBP1929	Cassette Lid Spring	G 3-4	QBG1553	Rubber Cushion
G 1-2	XTN2+6B	Tapping Screw $\oplus 2 \times 6$	G 3-5	QGS3045	Main Name Plate
G 1-3	QQC1900	Shelter (for G1-6)	G 4	QYF0437	Battery Cover Assembly
G 1-4	QMF2257	Switch (S4) Angle	G 5	XTN26+23JFZ	Screw $\oplus 2.6 \times 2.3$
G 1-5	QKF2095	Cassette Lid	G 6	XTN26+8B	Tapping Screw $\oplus 2.6 \times 8$
G 1-6	refer to S4	Monitor Switch			
G 1-7	QBN1875	Eject Spring			
G 1-8	XQS14+C18	Screw $\oplus 1.4 \times 1.8$			
G 1-9	XQN18+C35	Screw $\oplus 1.6 \times 3.5$			
G 1-10	QMA3903	Speaker Holding Metal			
G 2	EAS65P31S	Speaker			
G 3	QYM0862	Bottom Case Assembly			
G 3-1	QBN8024	Battery Terminal-A (-)			
G 3-2	QBN8023	Battery Terminal-B (-)			
<b>ACCESSORY</b>					
A 1	QQT3372	Instruction Book			
<b>PACKINGS</b>					
P 1	QPN4371	Inside Carton			
P 2	XZB16X25A02	Poly Bag (for UNIT)			
P 3	QPS0445	Pad			
P 4	QPA0657	Cushion			